

Remarks/Arguments:

Claims 1-16 were pending in the application at the time of the Office Action. Claims 1-4 and 6 are amended herewith to more distinctly set forth their intended scope. New claim 17 is added, showing in structural format a polymer according to the invention. Support may be found throughout the specification, and no new matter has been added.

35 USC § 103(a)

Claims 1-3 and 6-16 are rejected under 35 USC § 103(a) as unpatentable over WO 02/25764 ("McGrath"). Claims 1-8, 13, and 14 are rejected under 35 USC § 103(a) as unpatentable over WO EP 0008894 ("Rose"). Applicants submit that neither reference teaches or suggests the features of instant claim 1, for the following reasons.

Instant claim 1 recites a polymer consisting of linked units. Each of at least 80% of these units consists of one ion-conducting region and one spacer region connected thereto.

The ion-conducting region has a specific structure. It consists of one or more aromatic groups, optionally connected by electron-donating groups, each of the one or more aromatic groups being adjacent to at least one electron-donating group and each having attached thereto at least one pendant ion-conducting functional group.

The spacer region also has a specific structure. It consists of at least four aromatic groups, optionally connected by electron-withdrawing groups, each of the at least four aromatic groups being adjacent to at least one electron-withdrawing group and none of them having attached thereto an ion-conducting functional group.

In contrast to the structured polymer recited in claim 1, McGrath prepares what the skilled artisan would interpret to be random copolymers. See Scheme 1 on page 10, Scheme 2 on page 13, Scheme 3 on page 16, and Examples 1, 3 and 4. Applicants can find no teaching or suggestion in McGrath to make the structured polymers recited in claim 1. For at least this reason, McGrath does not render claim 1 (or its dependents) obvious.

Rose teaches copolymers that include, in no particular order or sequence, substantially fully sulfonated aromatic (A) groups and substantially non-sulfonated aromatic (B) groups. In order to render claim 1 obvious, Rose would have had to teach the particular connectivity of claim 1 that recites exactly one of each group connected together to form a unit, with such

units constituting at least 80% of the units of his polymer. But he does not teach or suggest that level of structure. Examples 1, 2 and 6 describe "copolymers" without indicating any particular structural relationship between the substantially fully sulfonated (A) groups and the substantially non-sulfonated (B) groups. Rose does not describe the source of the polymers that are sulfonated to form the polymers of his invention, which appear to be random copolymers. For at least this reason, Rose does not support *prima facie* obviousness of claim 1 or its dependents.

Claims 1-10 and 13-16 are rejected under 35 USC § 103(a) as unpatentable over WO U.S. 2002/0187377 ("Shinoda").

The Office Action notes that Shinoda's polymer of formula (1) might for example have a sulphonylphenylene group for Ar¹ and a 4-phenylene segment for Ar². Thus, the Office Action considers the Ar¹ group of Shinoda's polymer to provide Applicants' ion-conducting region and the Ar² group to provide the spacer region. In contrast, the ion conducting region of claim 1 consists of one or more aromatic groups bearing a pendant ion-conducting functional group, optionally connected by electron-donating groups (e.g., ether or sulphide linkages). But in the structure proposed in the Office Action, every ion-conducting region would include not only a sulphonated phenylene groups but also a [SO₂-N⁻(X⁺)-SO₂] moiety (which is also ion-conducting). Applicants note that Shinoda's [SO₂-N⁻(X⁺)-SO₂] moiety is not pendant from the Ar¹ group as recited in Applicants' claim 1. For at least this reason, Shinoda does not teach a polymer as recited in claim 1 or its dependents, and Applicants respectfully request that the rejection be withdrawn.

Claims 1-14 are rejected under 35 USC § 102 as anticipated by or, in the alternative under 35 USC § 103(a) as unpatentable over US 5362836 ("Helmer-Metzmann"). The Office Action points to the polymer of Formula II in column 7 at claim 2. The Office appears to construe the sulfonated phenylene of segment (a) as the ion-conducting region of Applicants' polymer and the phenylene-(CO)-phenylene-(CO)-phenylene segment of (a) as the spacer region. Applicants note, however, that there are only three aromatic groups in the purported spacer region, rather than the minimum of four recited in claim 1. Because this feature is not provided, Helmer-Metzmann is deficient as a basis for *prima facie* obviousness of claim 1 and its dependents for at least this reason.

Dependent claims 15 and 16 are rejected under 35 USC § 103(a) as unpatentable over Helmer-Metzmann, and the cited art is deficient for at least the same reasons as for claim 1.

Conclusion

Applicants respectfully submit that the application is in condition for allowance, and respectfully request reconsideration and notification of same. Applicants invite the Examiner to contact their undersigned representative, Frank Tise, if it appears that this may expedite examination.

Respectfully submitted,



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